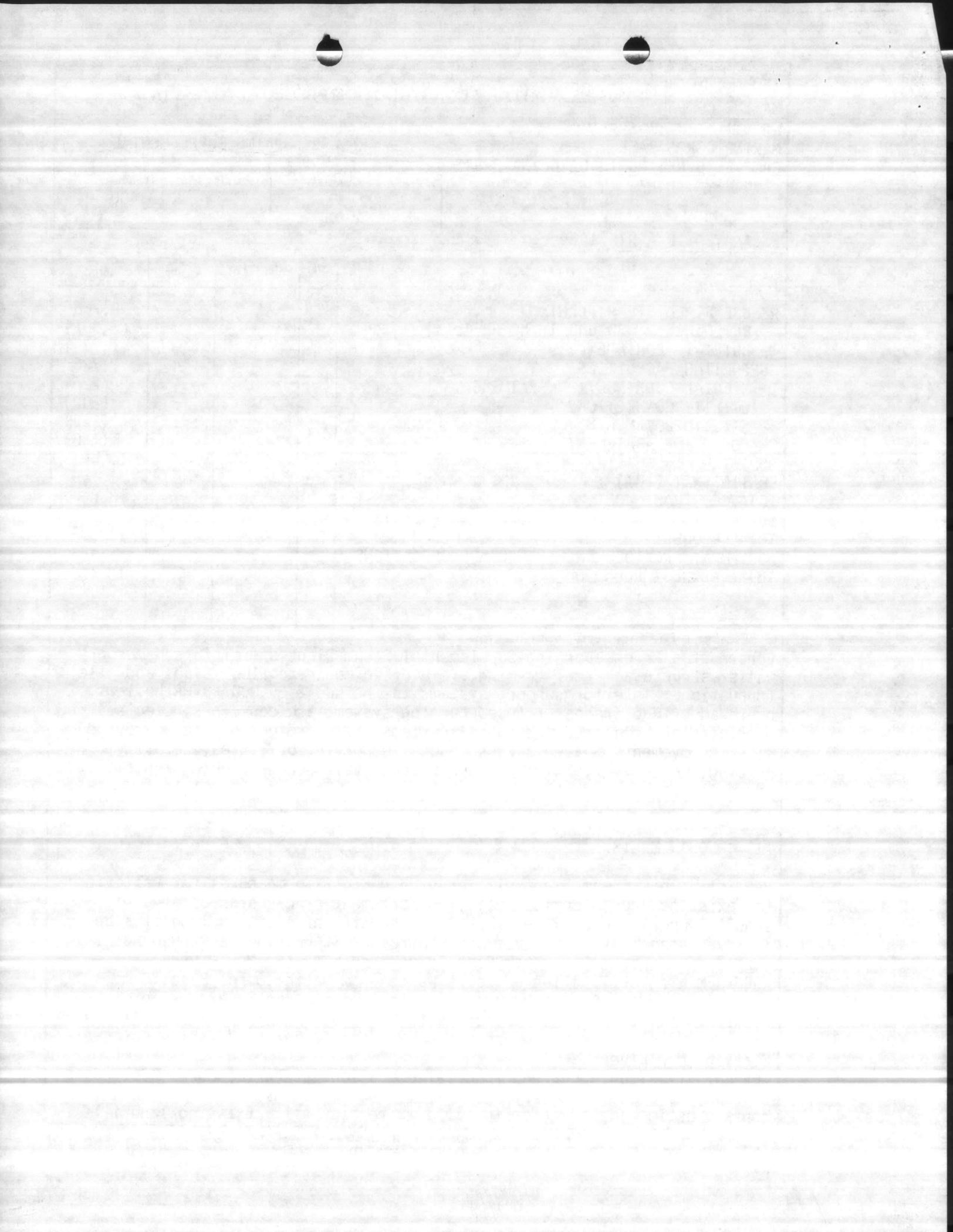
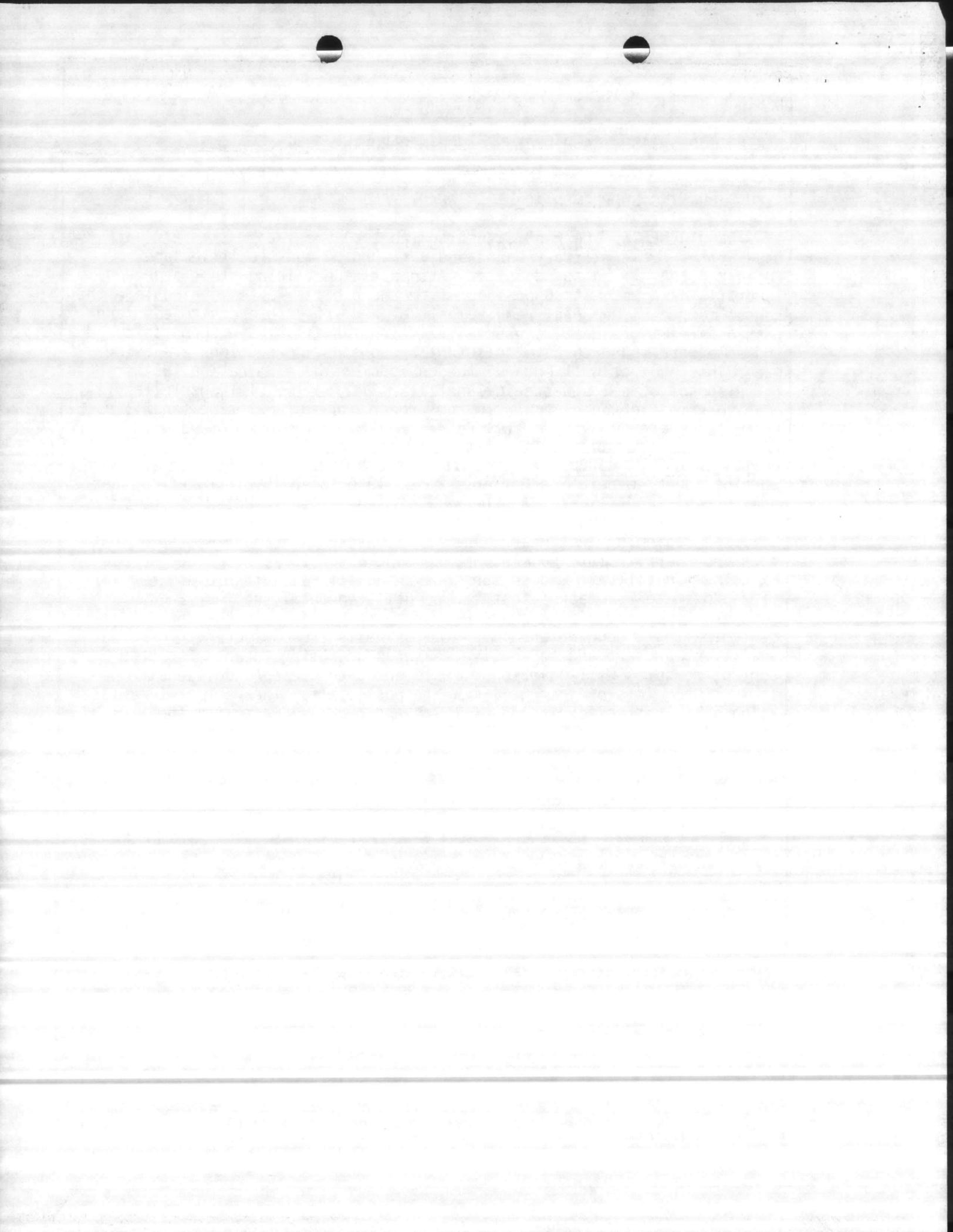


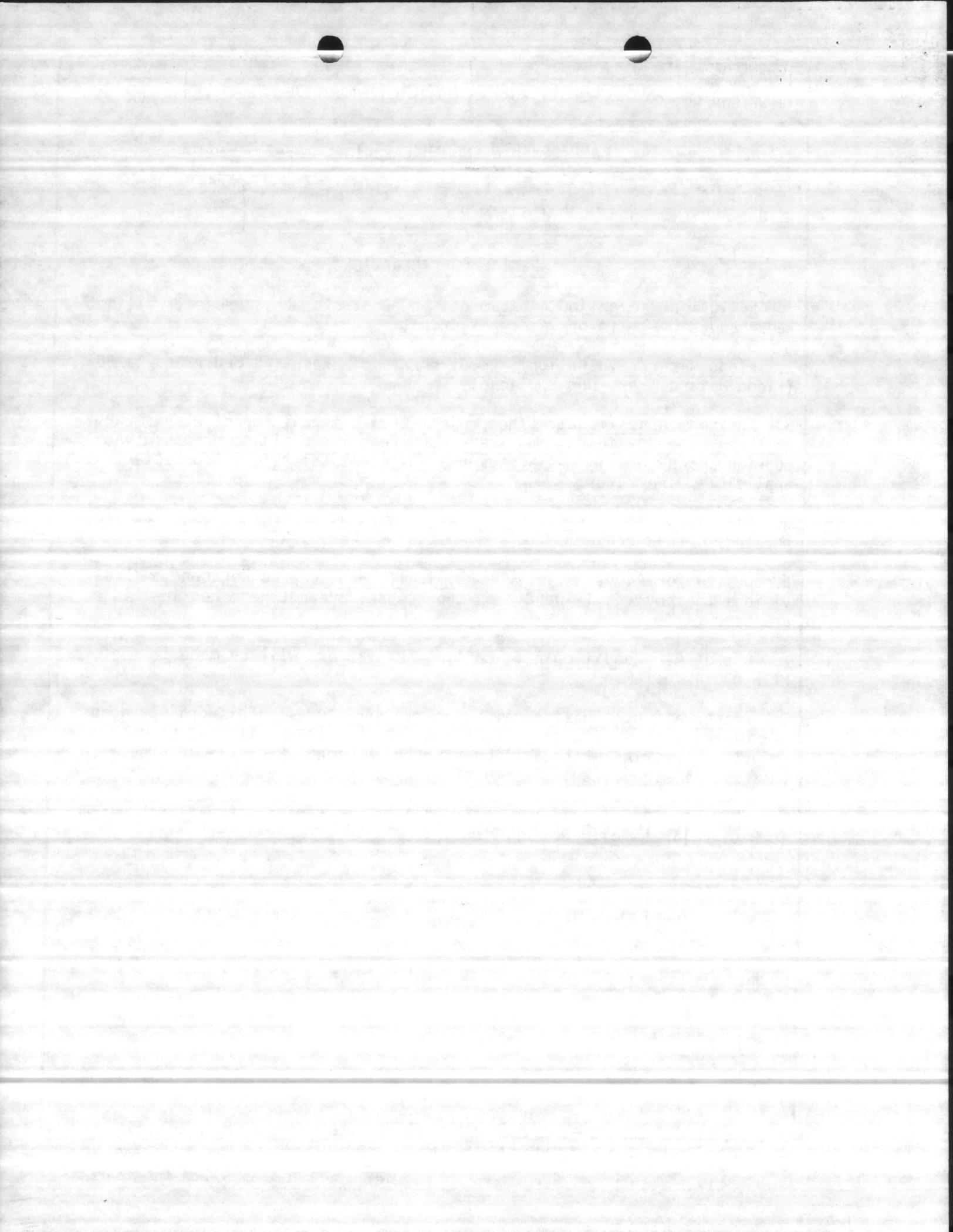
1. COMPONENT MARINE CORPS		FY 19 ⁸⁹ MILITARY CONSTRUCTION PROJECT DATA			2. DATE 15 Aug 85	
3. INSTALLATION AND LOCATION MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA 28542			4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT			
5. PROGRAM ELEMENT	6. CATEGORY CODE 821-09	7. PROJECT NUMBER P-822	8. PROJECT COST (\$000) 13,400			
ESCALATED TO APRIL 1989		9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)		
REFUSE FIRED STEAM PLANT				9,766		
BUILDING (2; 30,000 lb/hr Boilers)				(7,991)		
BUILT-IN EQUIPMENT				(1,775)		
SUPPORTING FACILITIES				1,725		
SPECIAL CONSTRUCTION FEATURES				(225)		
UTILITY CONNECTIONS				(500)		
SITE IMPROVEMENTS				(250)		
POLLUTION ABATEMENT				(750)		
SUBTOTAL				11,491		
CONTINGENCY (10%)				1,149		
TOTAL CONTRACT COST				12,640		
SUPERVISION, INSPECTION & OVERHEAD (5.5%)				695		
TOTAL REQUEST				13,335		
EQUIPMENT PROVIDED FROM OTHER APPROPRIATIONS				124		
TOTAL REQUEST ROUNDED				13,400		
10. DESCRIPTION OF PROPOSED CONSTRUCTION						
Construct a Refuse Burning Supplemental Steam Plant of reinforced masonry walls, structural steel framing, reinforced concrete floor slabs and pile foundation. Interior support systems to include 2;30,000 LB/HR boilers, overhead bridge cranes, refuse charging system, ash conveyors, electrostatic precipitators, related mechanical systems, fire protection etc. Provide site improvements, paved access roads, supporting utilities, security fencing, security lighting, telephones and telephone switching equipment, and pollution abatement.						
II. REQUIREMENTS:						
PROJECT: This Steam Plant will provide corrective measures for relieving the existing and potential Pollution Abatement problems associated with landfill operations. It will prolong the life of existing landfills and improve management techniques and controls. It provides a Refuse Burning Supplemental Steam Plant for Camp Geiger and MCAS (H) New River.						
REQUIREMENT: Utilization of solid waste from Marine Corps Base, Camp Lejeune, NC, and MCAS Cherry Point will eliminate costly expansion of facility landfills and/or procurement of new sites. This Plant will reduce oil requirements for steam generation at Camp Geiger, and Marine Corps Air Station, New River.						
CURRENT SITUATION: Current landfill operations at Marine Corps Base, Camp Lejeune, NC and MCAS Cherry Point will require extensive improvements to contain estimated increases in solid waste disposal. Existing landfills						



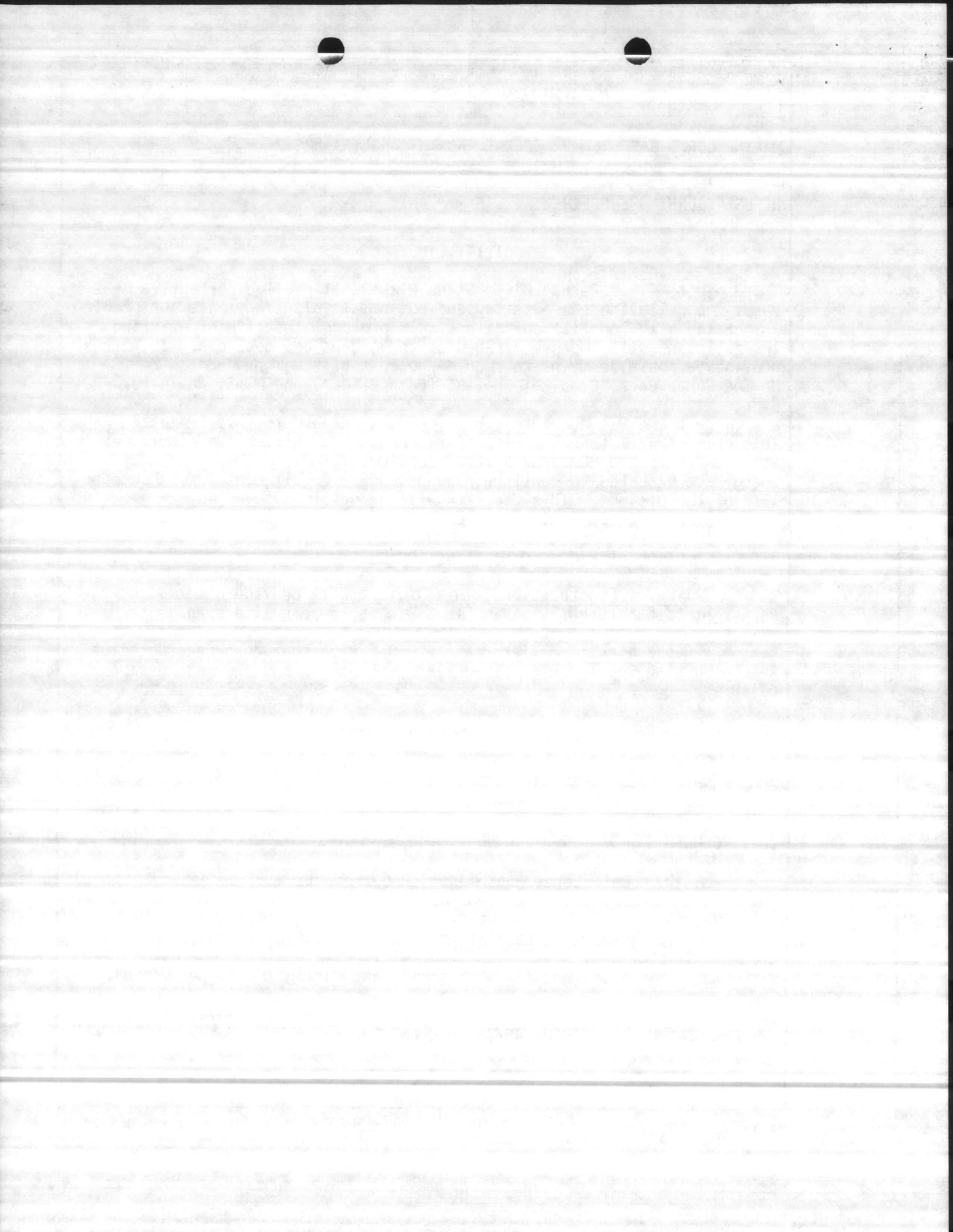
1. COMPONENT MARINE CORPS	FY 19 <u>89</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 15 Aug 85
3. INSTALLATION AND LOCATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542		
4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT	5. PROJECT NUMBER P-822	
<p>II. REQUIREMENTS: Current Situation (cont'd)</p> <p>used by the local military bases and surrounding municipalities are rapidly being filled to capacity. Attempts at obtaining other approved landfills have met with opposition from the public. Sites available either cannot meet environmental requirements or are infeasible due to cost and distances from prospective users. Existing landfills have been monitored and some were found to have pollutants. Constant corrections are being made. This project will enhance the environment by eliminating further need for disposal of solid waste in landfills. It further will enable landfill operators to tighten controls in the proper usage of existing landfills. Steam is generated using costly fossil fuel with the present value cost for 25 years operation of \$86.5 million dollars.</p> <p>IMPACT IF NOT PROVIDED: A feasibility study titled "Solid Waste and Wood Burning and Co-Generation Options" dated 19 October 1982, projected that the current landfill at MCAS Cherry Point would be exhausted by the year 1992. It assumed that U. S. Forest land (Croatan Forest) would be utilized beginning that year. The "Solid Waste Management Master Plans" for MCAS Cherry Point and MCB Camp Lejeune dated 1977, revealed the present existing landfill at Camp Lejeune has an additional suitable adjacent area of approximately 20 acres that can be utilized until the year 2000. However, impermeable liners are necessary to prevent leachate from further contaminating ground water. A system of wells are monitoring ground water quality at present and corrective measures are being taken. Stricter control measures will have to be implemented to prevent additional contamination. This project will make it possible for the current landfills at both activities to dispose of inert and oversize waste for the life of the project, based on 25 years.</p>		



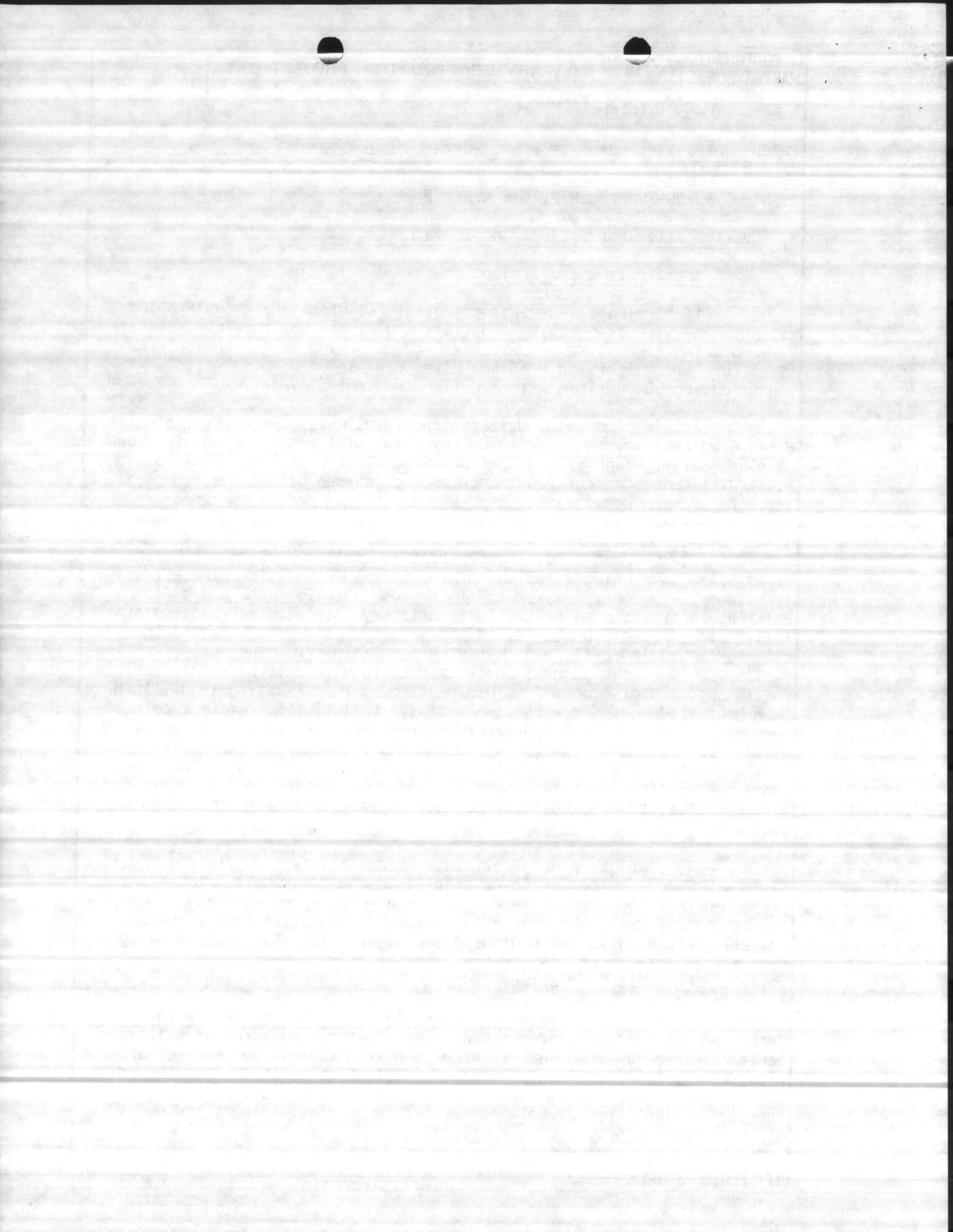
1. COMPONENT MARINE CORPS	FY 19 <u>89</u> MILITARY CONSTRUCTION PROJECT DATA	2. DATE 15 Aug 85
3. INSTALLATION AND LOCATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542		
4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT		5. PROJECT NUMBER P-822
<p style="text-align: center;"><u>SPECIAL CONSIDERATIONS</u></p> <ol style="list-style-type: none"> 1. <u>Pollution Prevention, Abatement, and Control</u>: This project will not cause additional air or water pollution. 2. <u>Flood Hazard Evaluation</u>: Requirements of Executive Order No. 11296 (Flood Hazards) are not applicable. 3. <u>Environmental Impact</u>: The project Environmental Impact Assessment has been made, reviewed, and where required, the design concepts give consideration to eliminating adverse environmental effects consistent with applicable directives. 4. <u>Fallout Shelter Construction</u>: Fallout shelter protection is not incorporated in this project. 5. <u>Design for Accessibility of Physically Handicapped Personnel</u>: Provisions for physically handicapped personnel are not required in this project. 6. <u>Use of Air Conditioning</u>: Ceiling "U" factors will be made to conform WITH DOD 4270.1-M. 7. <u>Preservation of Historical Sites and Structures</u>: This project does not directly or indirectly affect a district, site, building, structure, object, or setting which is listed in the National Register or otherwise possesses a significant quality of American history. 8. <u>"New Start" Criteria for Commercial or Industrial Activities Program (OMB Circular A-76)</u>: Not applicable. 		



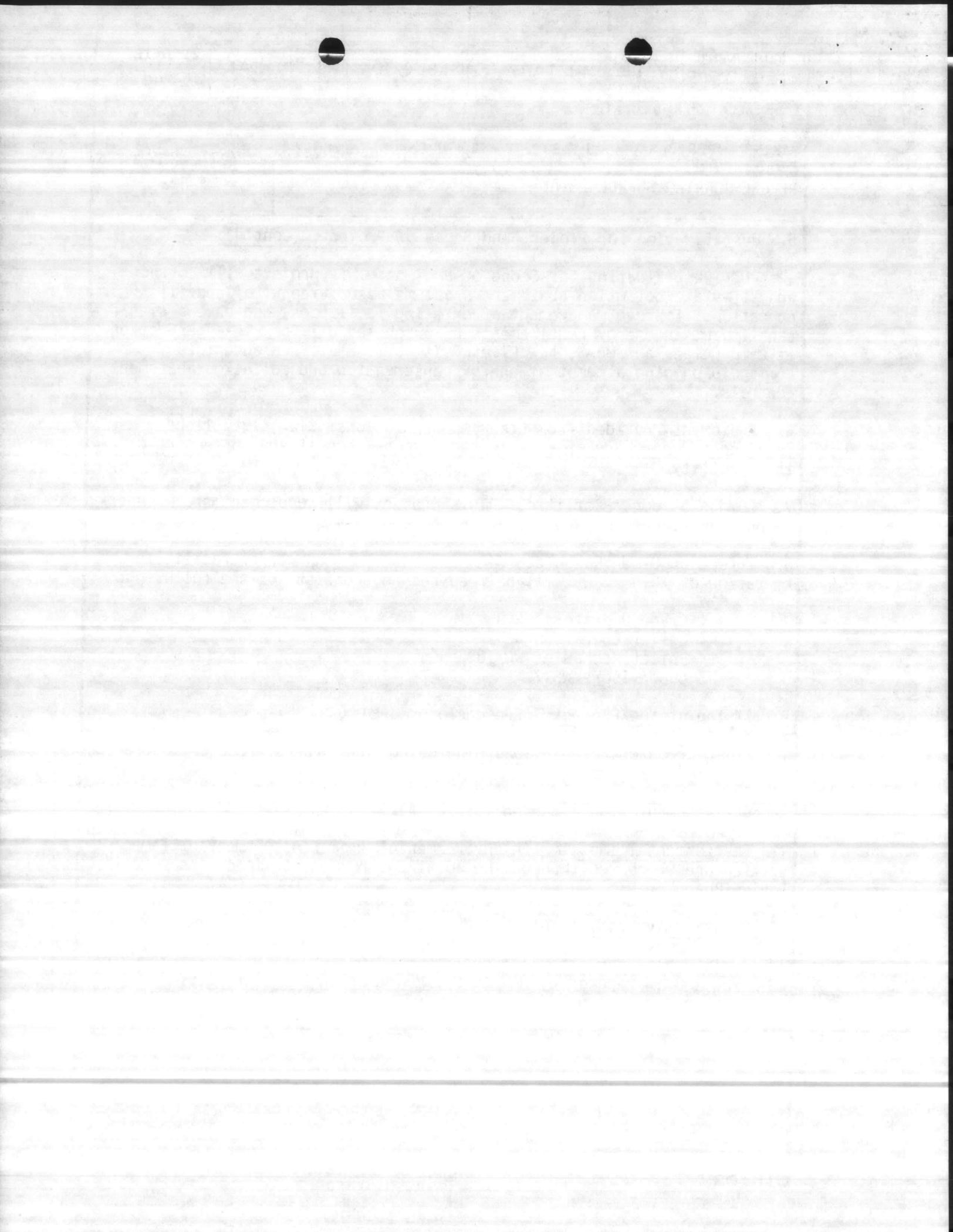
1. COMPONENT MARINE CORPS	FY 1989 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 15 Aug 85
3. INSTALLATION AND LOCATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542		
4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT		5. PROJECT NUMBER P-822
<p style="text-align: center;"><u>FACILITY STUDY</u></p> <p>1. <u>Project:</u> This Refuse Fired Steam Plant will provide corrective measures for relieving the existing and potential Pollution Abatement problem associated with landfill operations. It prolongs the life of existing landfills and will improve management techniques and controls. It further provides a positive means to reduce the cost of steam production for Marine Corps Base, Camp Lejeune, NC (Camp Geiger) and MCAS, New River.</p> <p>2. <u>Current and Planned Future Workload with regard to this Project:</u> This project will generate steam for schools, administrative facilities at Camp Geiger and MCAS New River. The facilities and their demand for energy are expected to continue as a necessary requirement throughout the life of the project. This facility will be utilized seven days a week and its duration of need is indefinite.</p> <p>3. <u>Description of Proposed Construction:</u></p> <p style="padding-left: 40px;">a. <u>Type of Construction:</u> This project will provide a permanent Refuse Fired Supplemental Steam Plant with a 25 year life span.</p> <p style="padding-left: 40px;">b. <u>Replacement:</u> Boiler Plant G-650 may be shut down pending actual Refuse Burning Supplemental Steam Plant efficiency and generating capabilities.</p> <p style="padding-left: 40px;">c. <u>Description of Work to be Done:</u></p> <p style="padding-left: 80px;">(1) <u>Primary Facility:</u> Provide a permanent solid Refuse Burning Supplemental Steam Plant.</p> <p style="padding-left: 80px;">(2) <u>Energy Conservation:</u> This project will show a savings of 381,586 MBTU's per year in deferred oil savings.</p> <p style="padding-left: 80px;">(3) <u>Collateral Equipment:</u> Requirements will be determined during preliminary design procedures.</p> <p style="padding-left: 80px;">(4) <u>Supporting Facilities:</u> This project will provide a Refuse Burning Supplemental Steam Plant that will relieve steam generating requirements for G-650 and AS-4151 steam plant during the summer months.</p> <p>4. <u>Cost Estimate:</u> Cost estimate by Atlantic Division, Naval Facilities Engineering Command (Code 407) and escalated to FY-89. See enclosure (1).</p>		



1. COMPONENT MARINE CORPS NAVY	FY 19 ⁸⁹ MILITARY CONSTRUCTION PROJECT DATA	2. DATE 15 Aug 85
3. INSTALLATION AND LOCATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542		
4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT	5. PROJECT NUMBER P-822	
<p>5. <u>Justification for Project and Scope of Project:</u></p> <p>a. <u>Justification for Project:</u></p> <p>(1) <u>Project:</u> Corrects potential Pollution Abatement Problems, prolongs the life of existing landfills and eliminates the immediate need for procuring new sites. Provides a Refuse Burning Supplemental Steam Plant for Camp Geiger and MCAS New River capable of burning solid waste and producing 60,000 lb/hr steam during the initial year.</p> <p>(2) <u>Requirement:</u> Utilization of solid waste from Marine Corps Base, Camp Lejeune, NC and MCAS Cherry Point will eliminate costly expansion of facility landfills and/or procurement of new sites. This Steam Plant will reduce energy requirements of purchased oils for steam generation for Marine Corps Base, Camp Lejeune, NC and Marine Corps Air Station, New River.</p> <p>(3) <u>Current Situation:</u> Current landfill operations at Marine Corps Base, Camp Lejeune, NC and MCAS Cherry Point will require extensive improvements to contain estimated increases in solid waste disposal. Existing landfills used by the local military bases and surrounding municipalities are rapidly being filled to capacity. Attempts at obtaining other approved landfills have met with opposition from the public. Sites available either cannot meet environmental requirements or are infeasible due to cost and distances from prospective users. Existing landfills have been monitored and some were found to have pollutants. Constant corrections are being made. This project will enhance the environment by eliminating further needs for disposal of solid waste in landfills. It further will enable landfill operators to tighten controls in the proper usage of existing landfills. Steam is generated using costly fossil fuel with the present value cost for 25 years operation of \$86.5 million dollars.</p> <p>(4) <u>Impact if not Provided:</u> A feasibility study titled "Solid Waste and Wood Burning and Co-Generation Options" dated 19 October 1982 projected that the current landfill at MCAS Cherry Point would be exhausted by the year 1992. It assumed that U. S. Forest land (Croatan Forest) would be utilized beginning that year. The "Solid Waste Management Master Plans" for MCAS Cherry Point and MCB, Camp Lejeune dated 1977, revealed the present existing landfill at Camp Lejeune has an additional suitable adjacent area of approximate 20 acres that can be utilized to at least the year 2000. However, impermeable liners are necessary to prevent leachate from further contaminating ground water. A system of wells are monitoring ground water quality at present and corrective measures are being taken. Stricter control measures will have to be implemented to prevent additional contamination. This project will make it possible for the current landfills at both activities to dispose of inert and over-size waste for the life of the project, based on 25 years.</p>		



1. COMPONENT MARINE CORPS NAVY	FY 19 ⁸⁹ MILITARY CONSTRUCTION PROJECT DATA	2. DATE 15 Aug 85
3. INSTALLATION AND LOCATION MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA 28542		
4. PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT	5. PROJECT NUMBER P-822	
<p>5. <u>Justification for Project and Scope of Project: (cont'd)</u></p> <p>b. <u>Justification for Scope of Project:</u> This project will correct and alleviate pollution abatement problems associated with landfill operations, improve management of existing facilities, and have a significant impact in energy requirements of purchased oil for steam generation at Camp Geiger and MCAS, New River. It will greatly enhance this Command's ongoing attempt at energy conservation and pollution abatement controls.</p> <p>6. <u>Equipment Provided from Other Appropriations:</u> \$124,419 will be required for purchase of a truck and disposal containers in support of this facility.</p> <p>7. <u>Common Support Facilities:</u> This project will supplement steam generating requirements of steam plant G-650 and AS-4151.</p> <p>8. <u>Effect on Other Resources:</u> An increase in manpower of facilitate operation of this plant will be required and consists of the following:</p> <ul style="list-style-type: none"> 4 Crane Operators WG-8 4 Boiler Operators WG-7 4 Boiler Mechanics WG-10 3 Supervisors WS-7 <p>9. <u>Siting of the Project:</u> See enclosure (2)</p> <p>10. <u>Other Graphic Presentations, including Photographs:</u> See enclosure (3)</p> <p>11. <u>Economic Analysis:</u> An ECIP economic analysis has been made with support documentation. See enclosure (4).</p> <p>12. <u>Environmental Impact:</u> An Environmental Impact Assessment will be written and processed through the local Environmental Impact Assessment Review Board.</p> <p>13. <u>Quantitative Data:</u> Not applicable.</p> <p>14. <u>Additional Information:</u> A cost summary design analysis (FY-87) dated 29 March 1983, prepared by NAVFACENCOM, Atlantic Division, Norfolk, VA is attached as enclosure (4).</p>		



MATERIAL & LABOR COST ESTIMATE

LANTDIV NORVA 4-11012/5 (REV. 12/80)

SHEET _____ of _____

PREPARED BY ARM

ATLANTIC DIVISION NAVAL FACILITIES ENGINEERING COMMAND

Const. Contr. No. _____

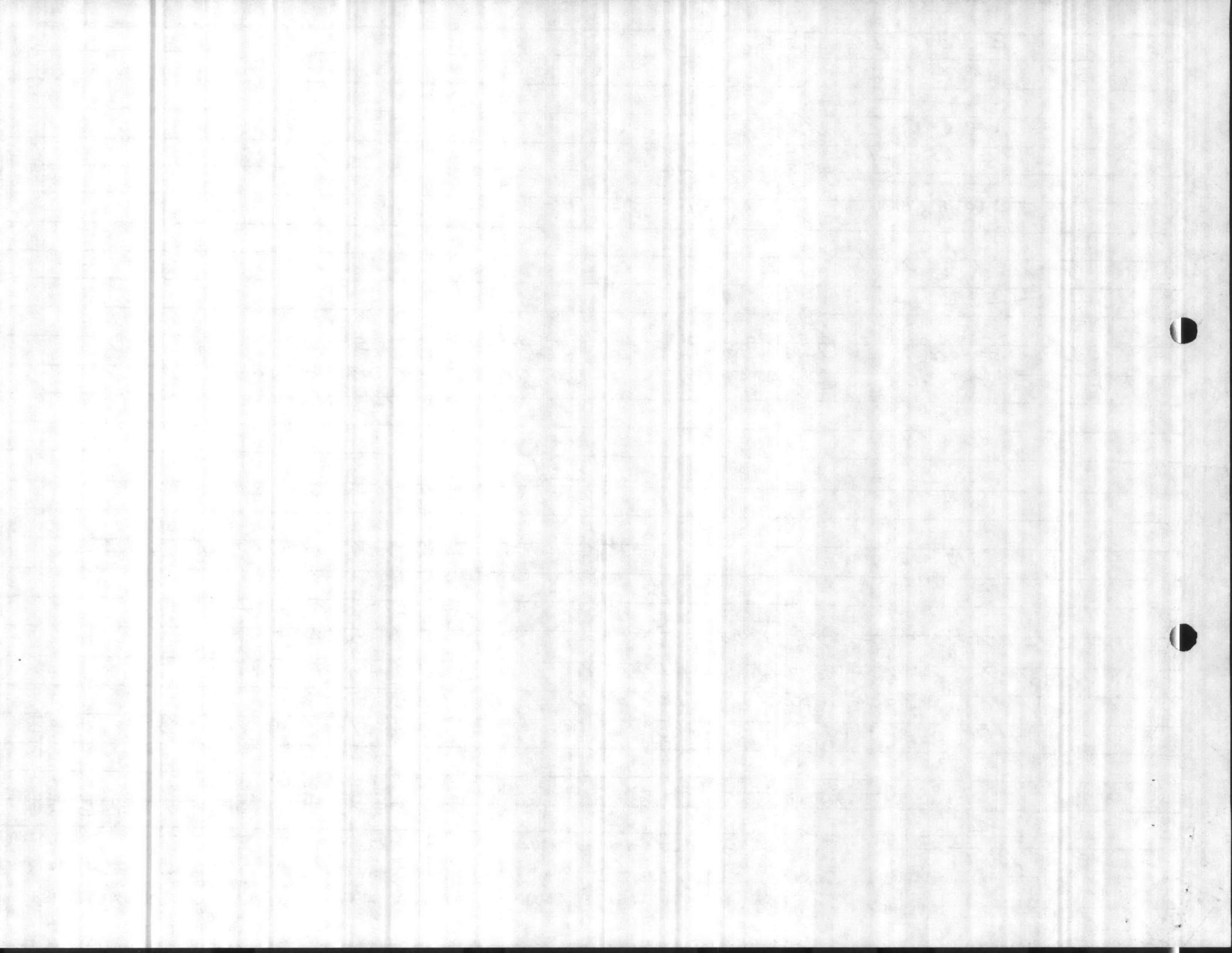
FUNDS AVAIL. _____

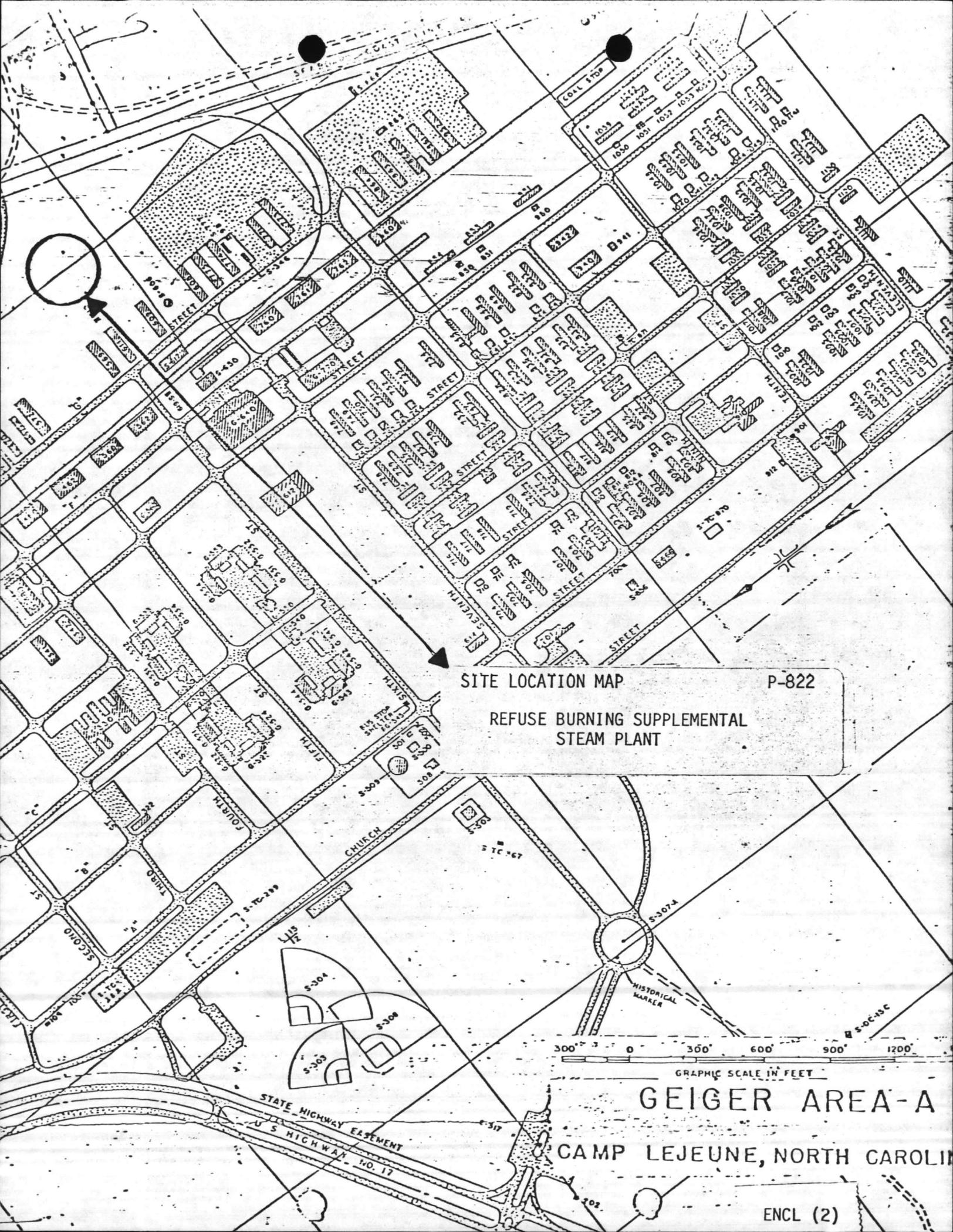
P-822 NORFOLK, VIRGINIA FY 88

DATE 10/10/84

PROJECT REFUSE BURNING SUPPLEMENTAL LOCATION _____ PRELIM. FINAL

ITEMS	QUANTITY	UNIT	MATERIAL COST		LABOR COST		TOTAL COST	REMARKS
			UNIT	TOTAL	UNIT	TOTAL		
REF. CONTRACT 71-1149 REFUSE FIRED STEAM PLANT, NORFOLK NAVAL SHIPYARD, PORTSMOUTH, VA. AWARDED 4/30/73, INCLUDED TWO - 30,000 pph 175 PSI BOILERS, BLDG, ROADS, WLGHT SCALE, CONNECTION TO UTILITIES.								
TOTAL INCLUDING CHANGE ORDERS.							4,300,312	
ESCALATE FROM		<u>4/88</u>	<u>240.9</u>				x <u>2.19</u>	
		<u>4/73</u>	<u>1130</u>					
							9,168,000	
UPGRADES UTILITIES							500,000	
ADJUST FOR MORE STRINGENT EPA REQUIREMENTS							750,000	
ADD FOR STANDBY CRANE							425,000 x <u>2409</u>	595,000
							<u>1382</u>	
							10,953,000	
CONT 10%							1,096,000	
							12,059,000	
SIDH 5.5%							663,000	
							12,722,000	
ROUND OFF							12,700,000	





SITE LOCATION MAP

P-822

REFUSE BURNING SUPPLEMENTAL
STEAM PLANT

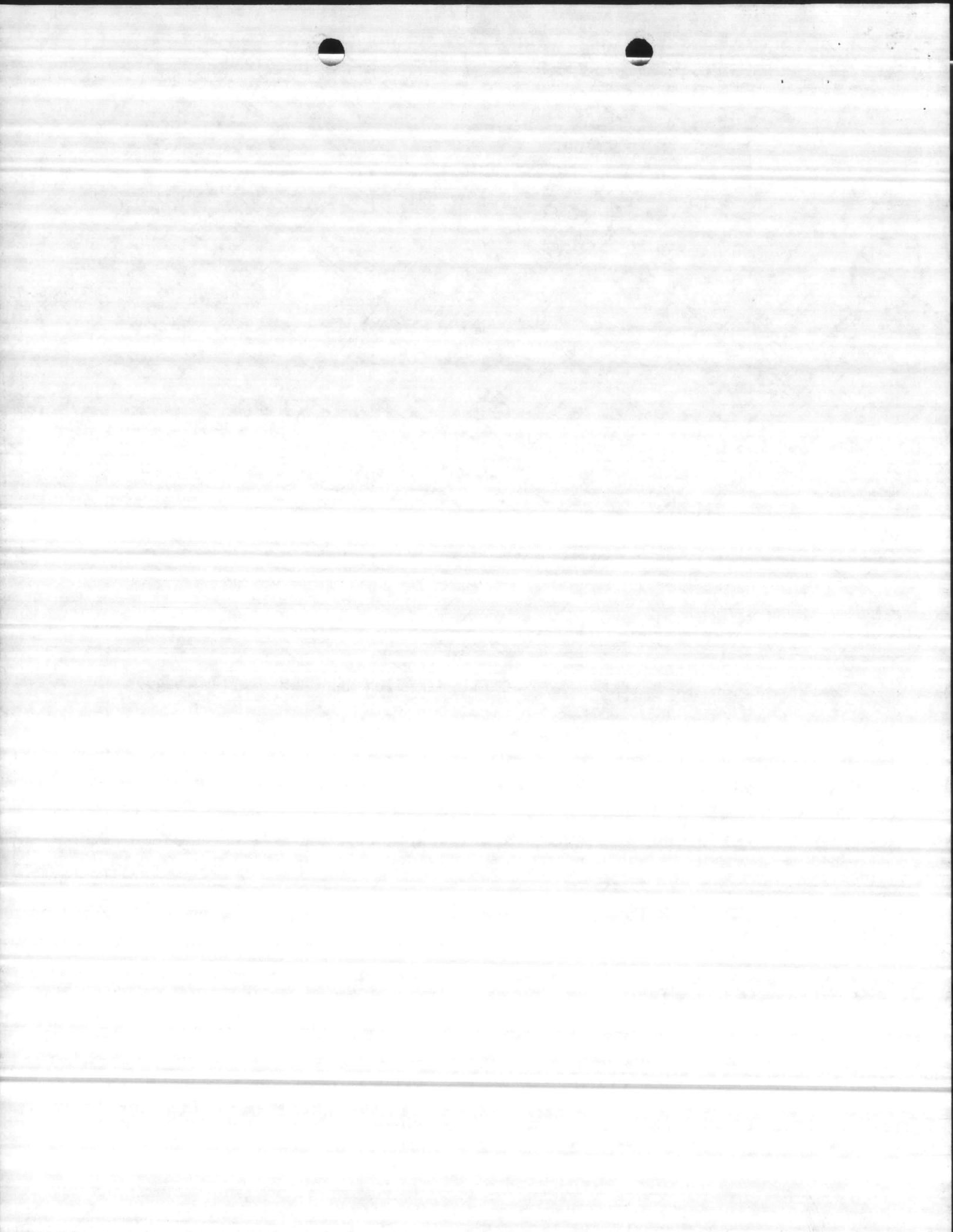
300' 0 300' 600' 900' 1200'

GRAPHIC SCALE IN FEET

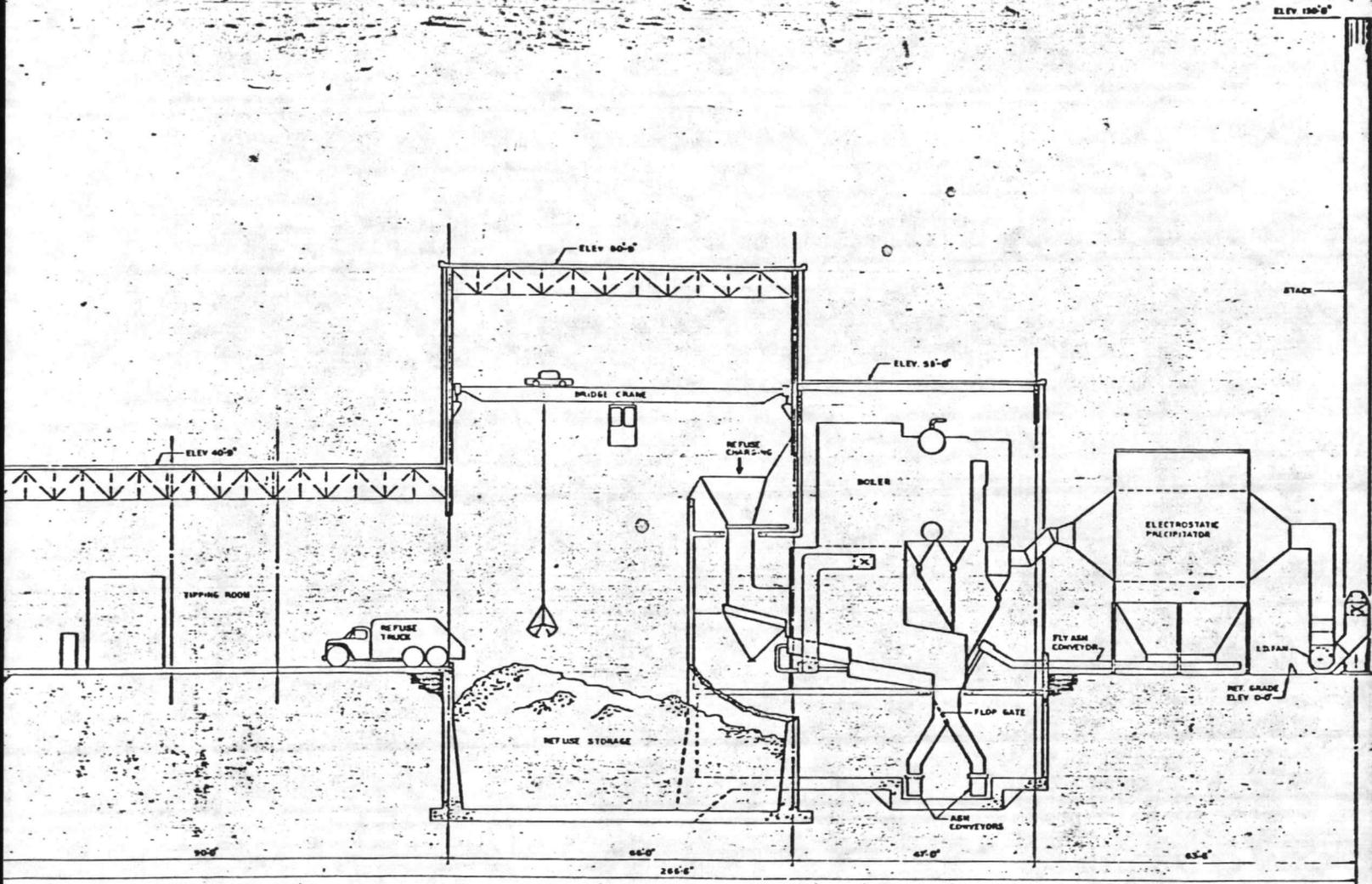
GEIGER AREA-A

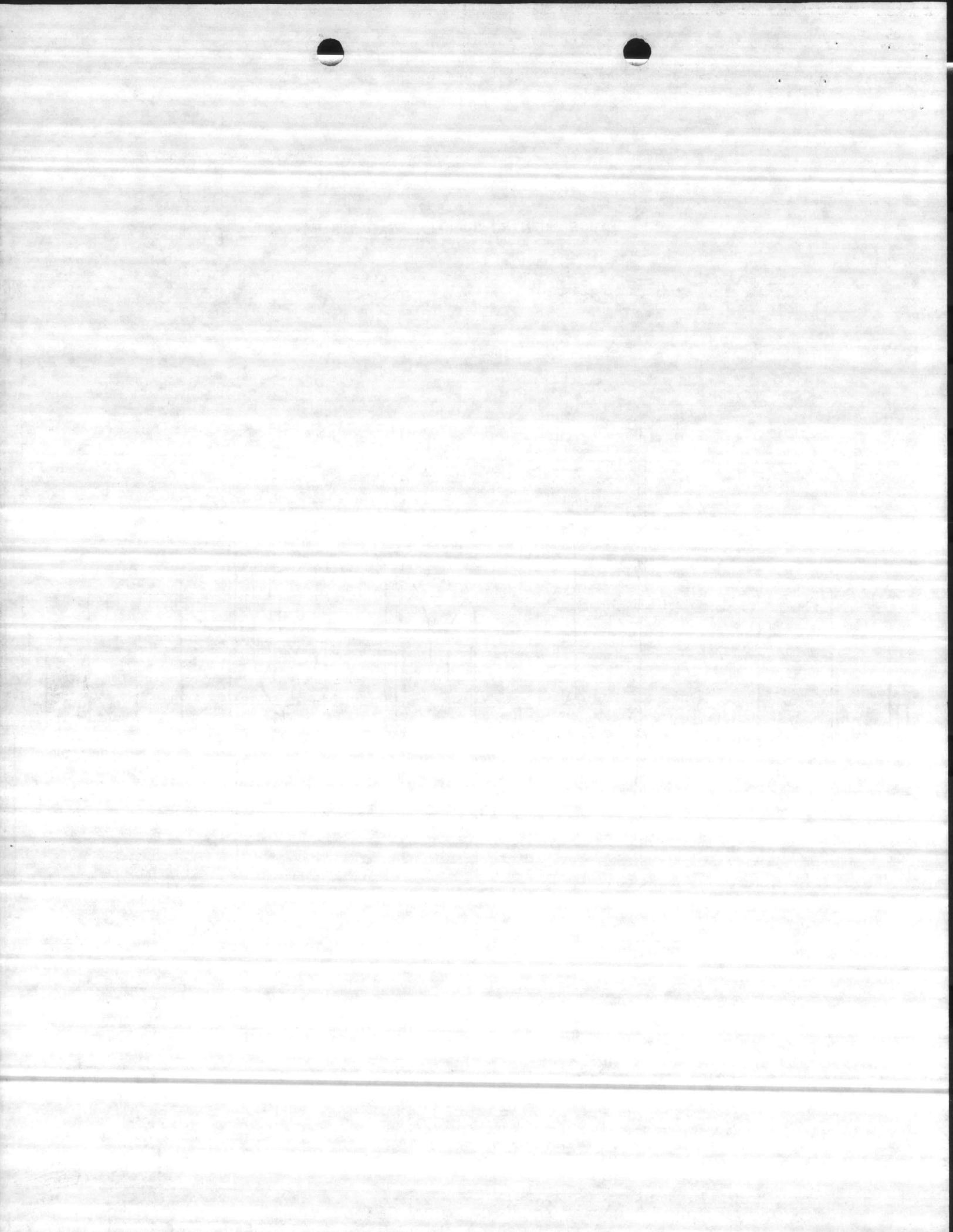
CAMP LEJEUNE, NORTH CAROLINA

ENCL (2)

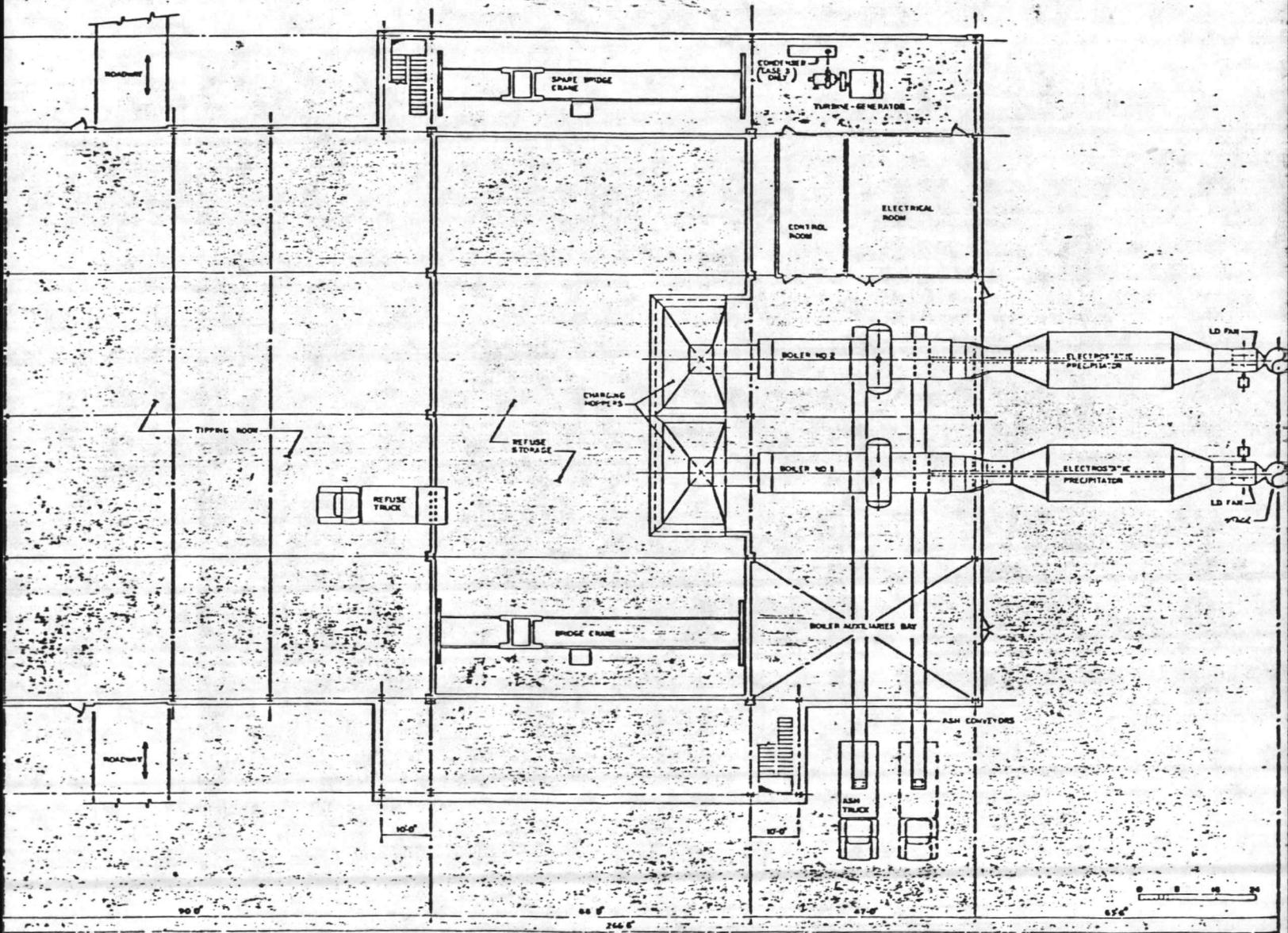


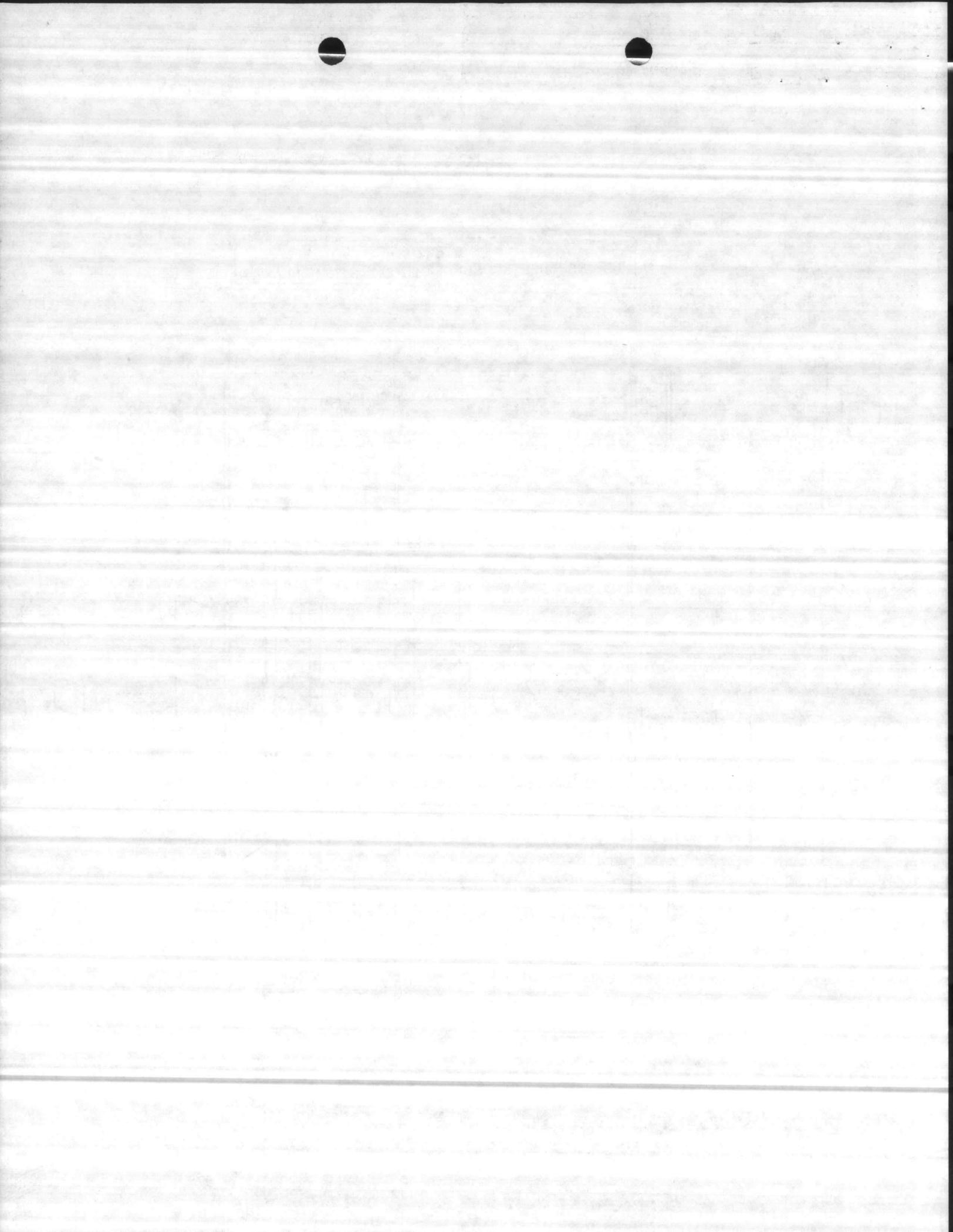
P-822
REFUSE BURNING SUPPLEMENTAL STEAM PLANT





P-822
 REFUSE BURNING SUPPLEMENTAL STEAM PLANT





PROJECT TITLE REFUSE BURNING SUPPLEMENTAL STEAM PLANT FISCAL YEAR 1988

DISCRETE PORTION NAME REFUSE BURNING STEAM PLANT

ANALYSIS DATE ECONOMIC LIFE 25 YEARS PREPARED BY G. Johnson

1. INVESTMENT

A. CONSTRUCTION COST	\$	12,640,000
B. SIOB	\$	695,000
C. DESIGN COST	\$	758,000
D. ENERGY CREDIT CALC. $(1A+1B+1C) \times .9$	\$	12,684,000
E. SALVAGE VALUE OF EXISTING EQUIPMENT	-\$	0
F. TOTAL INVESTMENT (1D-1E)		\$ 12,684,000

2. ENERGY SAVINGS (+) / COST (-)

ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNTED SAVINGS

FUEL	COST \$/MBTU(1)	SAVINGS MBTU/YR(2)	ANNUAL \$ SAVINGS(3)	DISCOUNT FACTOR(4)	DISCOUNTED SAVINGS(5)
A. ELEC	\$		\$		\$
B. DIST	\$		\$		\$
C. RESID	\$ 4.56	381,586	\$ 1,740,032	20.05	\$ 34,887,641
D. NG	\$		\$		\$
E. COAL	\$		\$		\$
F. TOTAL			\$		\$ 34,887,641

3. NON ENERGY SAVINGS (+) / COST (-)

A. ANNUAL RECURRING (+/-)	\$	-411,543
(1) DISCOUNT FACTOR (TABLE A)	9.524	
(2) DISCOUNTED SAVING/COST (3A X 3A1)	\$	-3,919,535

B. NON RECURRING SAVINGS (+) / COST (-)

ITEM	SAVINGS (+) COST (-)(1)	YEAR OF OCCURRENCE(2)	DISCOUNT FACTOR(3)	DISCOUNTED SAVINGS (+) COST (-)(4)
a.	\$ 65,658	5	.652	\$ 42,809
b.	\$ 65,658	10	.405	\$ 26,591
c.	\$ 65,658	15	.251	\$ 16,480
d.	65,658	20	.156	10,242
e. TOTAL	\$ 262,632			\$ -96,122

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) / COST (-) (3A2+3Bd4) \$ -4,015,657

D. PROJECT NON ENERGY QUALIFICATION TEST

(1) 251 MAX NON ENERGY CALC (2F5 X .33) \$ 11,512,921

a IF 3D1 IS = OR > 3C GO TO ITEM 4

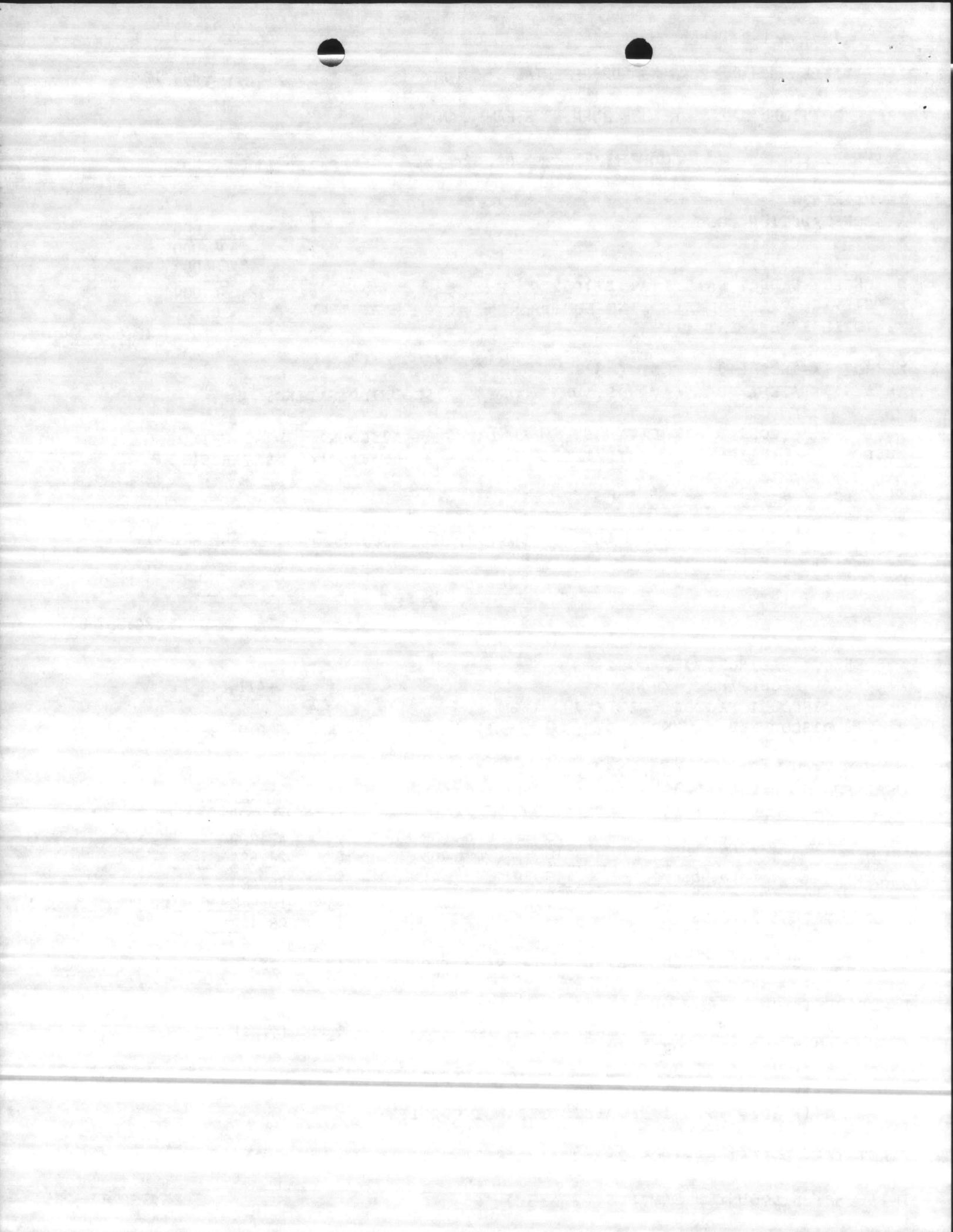
b IF 3D1 IS < 3C CALC $EIR = (2F5+3D1) \div 1F =$

c IF 3D1b IS = > 1 GO TO ITEM 4

d IF 3D1b IS < 1 PROJECT DOES NOT QUALIFY

4. FIRST YEAR DOLLAR SAVINGS $2F3+3A+(3B1d \div \text{YEARS ECONOMIC LIFE})$ \$ 1,338,994

5. TOTAL NET DISCOUNTED SAVINGS (2F5+3C) \$ 30,871,984



SUMMARY

LIFE CYCLE COST ANALYSIS

Information utilized in this analysis was obtained from the Solid Waste and Wood Waste Burning and Coal - Generation Study as provided by LANTNAVFAC-ENGCOC. The study pertaining to Co-Generation is attached as supporting documentation.

I. INVESTMENT:

Construction Cost	\$12,640,000
SIOH	695,000
Design Cost	758,000

II. ENERGY SAVINGS:

Oil-Fired Plants (Status Quo)

a. Usage (Page VI-25)

$$\frac{(38.99 \text{ MBTU/HR} + 48.13 \text{ MBTU/HR})}{2} = 43.56 \text{ MBTU/HR Average}$$

$$(43.56 \text{ MBTU/HR}) \times (8,760 \text{ HR/Year}) = 381,586 \text{ MBTU/Year}$$

III. ENERGY COSTS:

a. Fuel Oil 4.56/MBTU

IV. Non-Energy (Annual) Costs: (Recurring) Pages VI-18 and VI-26)

<u>Waste Burning</u>		<u>Oil-Fired Boilers (Status Quo)</u>	
Labor	\$437,951	CP Development	\$124,556
Maintenance	241,018	CL Development	458,529
Trash Transfer	345,527	CP Maintenance	18,310
Ash Disposal	<u>17,951</u>	CL Maintenance	<u>29,508</u>
TOTAL	\$1,042,447		\$630,903

Net Non-Energy Annual Costs:

$$\$1,042,447 - \$630,903 = \$411,543$$

V. Non-Recurring Costs:

a. Co-Generation Plant = Plant overhaul (Page VI-13)

\$65,658/Year every 5 years.

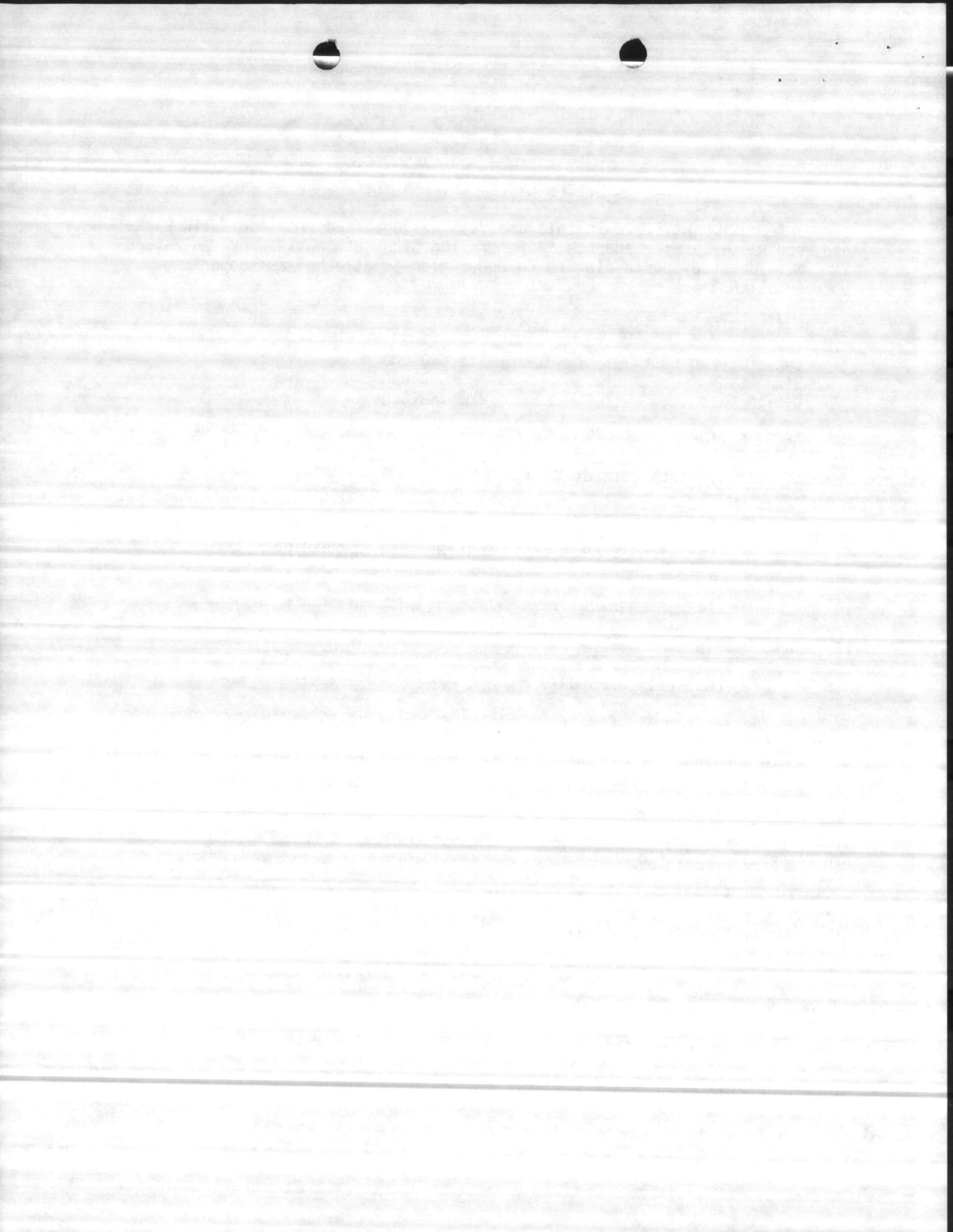


TABLE 1
 COST SUMMARY
 DESIGN ANALYSIS (FY 87)
 DIFFERENTIAL INFLATION

	Construction Costs (1982 \$)	Total Project Cost Present Value	Total Refuse Plant Savings	Uniform Annual Cost	Annual Refuse Plant Savings
**Case 1A- Refuse-fired plant producing steam only	15,468,300	*37,728,035	78,850,695	3,961,400	8,279,157
Case 1B- Incremental cost of landfill for refuse and oil for steam	--	116,579,069	--	12,240,557	--
**Case 2A- Refuse-fired plant producing steam and electricity with a backpressure turbine, sell elect	19,134,300	34,027,792	74,348,706	3,572,847	7,806,458
Case 2B- Incremental cost of landfill for refuse and oil for steam	--	109,376,498	--	11,484,303	--
Case 3A- Refuse-fired plant producing electricity with a back pressure turbine, use elect on base	19,134,300	38,868,016	--	4,081,060	--
Case 3B- Incremental cost of a landfill for refuse and oil for steam	--	109,376,498	70,508,482	7,403,243	7,403,242

*Escalated to April 1988 = $37,728,035 \times 1.046 = 39,463,525$ Say 39,464,000

**Case 2A is shown as lowest project cost. However, Case 1A was recommended by NAVFACENCOM, Norfolk, VA. (Case 1A has greatest total present value savings in both differential and differential inflation cases.)

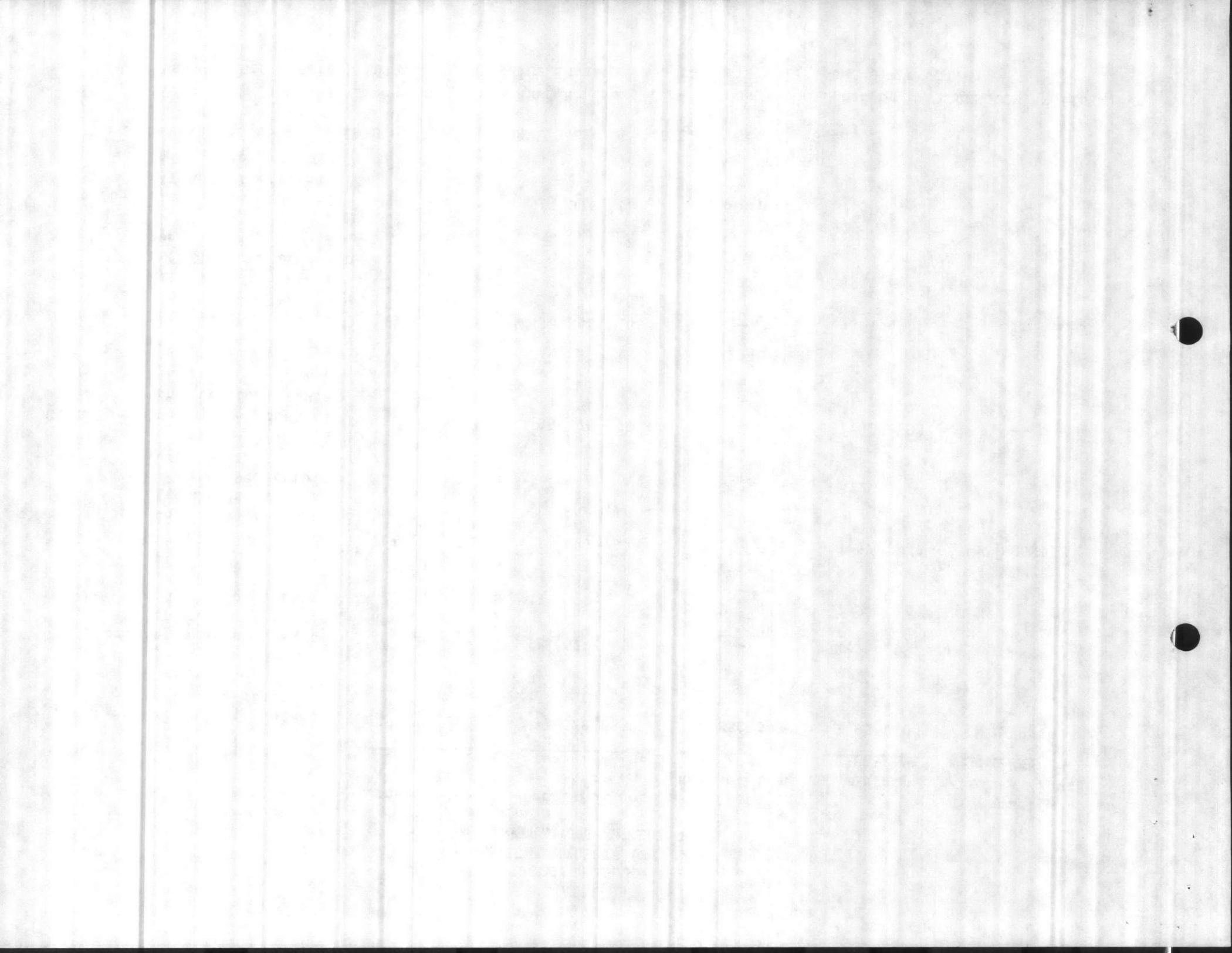


TABLE I
 COST SUMMARY
 DESIGN ANALYSIS (FY87)
 NO DIFFERENTIAL INFLATION

	Construction Costs (1982 \$)	Total Project Cost Present Value	Total Refuse Plant Savings	Uniform Annual cost	Annual Refuse Plant Savings
Case 1A - Refuse-fired plant producing steam only	15,468,300	35,634,955	24,081,669	3,741,595	2,528,524
Case 1B - Incremental cost of landfill for refuse and oil for steam	--	59,716,624	--	6,270,120	--
Case 2A - Refuse-fired plant producing steam and electricity with a backpressure turbine, sell elect	19,134,300	36,446,074	19,978,502	3,826,761	2,097,700
Case 2B - Incremental cost of landfill for refuse and oil for steam	--	56,424,576	--	5,924,462	--
Case 3A - Refuse-fired plant producing electricity with a backpressure turbine, use elect on base	14,134,300	38,930,007	17,494,569	4,087,569	1,836,893
Case 3B - Incremental cost of a landfill for refuse and oil for steam	--	56,424,576	--	5,924,451	--

